NURSING IN HYDROTHERAPY

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HYDROTHERAPY is a branch of therapeutics in which the nurse is probably a more important factor than in any other department of the treatment of diseases. Electro-therapy, dieteto-therapy, and climato-therapy are some of the other divisions of therapeutics; in the latter two the physician prescribes and the patient executes the prescription at his own sweet will; in the former the physician himself usually administers the remedy. In hydrotherapy, however, physician and patient alike are helpless if the nurse is not ready to execute the prescription.

The fact that there is no branch of nursing so much slighted in training-schools as the application of water in diseases accounts for many failures of this valuable agent which are daily observed and which have served to prevent its more universal adoption, and only when physicians and nurses will begin to study the science of hydrotherapy will humanity get the full benefit of this far-reaching and thorough medicinal agent.

It is not my intention—in fact, it is impossible in this brief paper—to describe the many various methods in which water may be applied. Dr. Simon Baruch contemplates the issuing of a work on "The Technique of Hydrotherapy for Nurses," a book which will cover the entire field. My object is to point out a few plain facts, give some practical hints, and to arouse and stimulate the interest in this so sadly neglected branch of nursing.

We all know that the nurse who is thoroughly grounded in the principles of her profession—*i.e.*, in the reasons why the medicine, food, water, and stimulant are given, why the character of the respiration and pulse must be observed, why the color, quantity, and quality of the urine must be noted—will become the most efficient aid to patient and physician. Such a nurse will always present a more intelligent history of the case from which the doctor may obtain the most valuable clues for the proper treatment of the patient than one who mechanically reports what is observed. It therefore becomes of prime importance that the nurse be instructed in the general principles of hydrotherapy—*i.e.*, why water is to be applied, why the temperature, the mode, and the duration of the application are to be strictly guarded and the effect noted and reported to the physician.

Hydrotherapy is the application of water in diseases, the word being derived from two Greek words signifying "to heal" and "water." This

word should be distinguished from hydropathy, the devotees of which believe in water as the universal curative agent. Every well-informed nurse knows that there exists no universal curative agent.

Hydrotherapy depends upon water for remedial effects chiefly as a medium of conveying temperature. It is not the water alone which acts upon the human system, but the cold and heat conveyed through it to the skin (mostly). A little cold water poured down the back suddenly often stops nose-bleed; a cold key does the same. Walking briskly in the cold air brings color to the cheeks, just as bathing the face in cold water with good friction does. Both are due to the same cause: the irritating, exciting effect of cold upon the fine nerves and blood-vessels of the skin, which results in reaction. Hence iron and air, conveying temperature, are as useful as water. The reason why water has been preferably selected for this purpose is that it may be applied in the solid, liquid, and vaporized form, that the force or pressure with which it is applied may be mathematically measured as also its temperature, that it affords numerous technical advantages in its application, and that it absorbs and gives off temperature better than any other agent.

The skin is the most frequent part of the body on which the action of water for remedial purposes is expended. The reason for this is not far to seek. The skin is an enormous network of fine nerves and blood-vessels, as is evident to the most superficial observer by plunging a fine needle into it. Pain announces the presence of a nerve, the flow of blood testifies to the presence of a blood-vessel. Now if it be borne in mind that this fine needle has struck (irritated, as the physiologist calls it) the end of a nerve, the origin of which anatomists have distinctly traced to the brain and spinal cord (the central nervous system), and that this nervous system presides over all the functions and furnishes all the power of every organ in the human body, is it not clear that any agent which can thus influence the skin nerves must be powerful for good or evil in its influence upon the human body? And this is a most important truth!

Again, the minute blood-vessels of the skin, from which a needle draws blood, are but the outlying terminals of that vast system called the circulation, which derives all its power and force from the heart. If the needle only scratches the surface of the skin, there appears a bright red streak, which means that this irritation has caused a dilatation of the minute blood-vessels. Now, inasmuch as the circulation in the skin is so readily affected by an application of the point of a needle, is it not logical to say that the whole circulation of which the skin-vessel is a part may be thus influenced? But we shall not be content with reason

and logic. As nurses, standing at the bedside of a suffering patient, we shall apply this reasoning and this logic in order to reach conviction.

How can we demonstrate that the irritation of the end-nerves in the skin affects the brain?

Dash a cup of cold water upon the chest of a fainting person! Cold is an irritant just like the needle. If the needle scratches the skin, it produces an unpleasant sensation; if it penetrates more deeply, it produces pain and damages the skin. A dash of cold water produces, like the needle, an unpleasant sensation; if it is applied longer in the shape of ice, it too produces pain; it too would damage the skin if retained long enough to freeze the part. Scratching the skin with a needle does not arouse a fainting person; it would require many needles applied to a large surface to so irritate as to stimulate the depreciated brain to resume all its functions. A dash of cold water irritates a considerable surface, stimulates the nerves beneath it; this stimulation is conveyed, as physiology teaches, directly by the sensory nerves to the brain. That the latter feels the stimulus is manifested by the gasp which ensues. This gasp is nothing more than the reflex effect of the brain stimulus. Breathing is resumed, the color rushes to the pallid lips, the eyes brighten, the wheels of life, temporarily checked by syncope, are again in motion. Cold applied to the skin nerves has worked this marvel. Is there any medicine that can accomplish it? Here is the principle of hydrotherapy in a nutshell. How does the physician apply it? The small nerve area which is stimulated by the dash of cold water to the chest or face suffices to arouse a fainting person. But this small dose of cold water would have no effect on a case of opium poisoning. Here we need a bucket of cold water or a strong douche from the nozzle of a hose. And even this is often insufficient. In the stupefied condition of a typhoid a dash of cold water would not be enough. He needs a larger dose; we put him into a tub of water at a temperature adapted to his case; he is aroused, his face brightens, his pulse improves. The effect of this large dose of stimulant to his entire skin area of nerves is conveyed to the brain; the latter is refreshed and enabled to furnish more power to the heart and the lungs, and therefore the whole machinery of the organism is stimulated, sustained, invigorated. Again the patient lapses into stupor, as the effect of the bath passes away; again he is tubbed and rubbed, the duration and temperature of the bath being judiciously adapted by the physician.

Surely this demonstration must convince the most sceptical that the action of cold water, excited through the skin, upon the whole organism is momentous, and that it may be adapted or dosed to varying conditions

as no other remedy can be adapted. But how is this dosing of water externally applied accomplished?

We dose medicinal agents by weight or measure and frequency of administration. Water is dosed: 1, by its temperature; 2, by the duration of its application; 3, by the pressure or force with which it is applied; and 4, by the method of the application.

1. That the effect of water at 34° F. is very different from that of water at 110° F. is a trite fact. This being true, every few degrees more or less must furnish different results.

2. That the duration of the application of water of the same temperature influences its effect is not so well known. Plunge one hand into a bucket of water at 40° F. for a second, remove and dry it; the result will be a sudden chilling, followed by reaction or rapid warming of the hand. Dip the other hand into the same water and leave it for five minutes. The result will be chilling followed by numbness, succeeded by pain. On withdrawal the hand will be cyanotic and will require much friction to warm it or produce reaction. The same individual and the same temperature are used in this experiment, only the duration is changed. How different the result! If the effect varies so greatly, may we not obtain more moderate and yet varying effects from lesser differences in duration?

3. That the effect of water applied without pressure or force differs greatly from that of water applied with force is readily demonstrated by spraying a patient suffering from depressed neurasthenia with water at 80° F., and treating the same patient afterwards with a douche, delivered under thirty-pound pressure. The former will chill the patient, the latter will arouse and stimulate him.

4. That the procedure, or mode of applying water, influences its effect may be demonstrated by washing or sponging a fever patient (ablution) with water at 75° F. and at another time applying the same quantity of water and of the same temperature as an effusion—*i.e.*, by pouring it over his head and shoulders from a basin. The former may soothe and cool him, the latter will refresh and stimulate him.

It follows, therefore, that the procedure by which the water is to be administered, the duration of its application (in chronic cases also the force), and the temperature of the water are of greatest importance. If the physician prescribes a cold sponging, it is the duty of the nurse to ask him at what temperature and of what duration. If a pack is ordered, the nurse should ascertain whether a dry pack or a wet pack, of what temperature and duration, and whether it is to be followed by dry friction, an alcohol rub, an ablution, or an effusion (in the latter two the temperature of the water also should be mentioned).

The terms cold water, warm water, and hot water are exceedingly indefinite; hence the temperature of the water should always be stated. The greater the difference between the temperature of the water and that of the skin the more intense the so-called shock will be, and therefore the more intense the effect. It is clear that a fever patient whose skin temperature is 102° F. will feel water at 90° F. as cool, while to a normal person whose skin temperature is 90° F. water at this temperature would be indifferent. All effects of cold or cool water depend upon the reaction produced by it.

Inasmuch as the reaction differs greatly with the amount of so-called "shock," it is necessary that these terms be more fully understood. In speaking of a "shock" produced by cold water we are accustomed to think of "shock" as a depression of the vital powers, because we are used to dealing with surgical shock, and the true definition of the latter is a "depression of the vital powers." But there is another definition of shock in our dictionaries—viz., an unpleasant surprise. We hear some sad news, we are shocked, but not necessarily enfeebled in our vitality. This is the shock of cold water upon the skin; it is an unpleasant surprise to the fine nerves and blood-vessels of the skin—a surprise, however, which results in the pleasant sensation called "reaction," if the cold water has been judiciously used. A fainting person receives an unpleasant surprise from cold water; reaction takes place and he awakens.

The chief aim of all cold applications being reaction, it is important for the nurse to clearly estimate the nature of this process. When a patient shivers for a considerable time during and especially after an application of cold water, it is an evidence that reaction is absent; therefore the application is not safe. When a fever patient, however, simply feels cold during a cold bath ordered by the physician, though he protests vigorously and even shivers a little, he must not be removed. Not unless the teeth chatter and cyanosis of the lips ensues, or the shivering amounts to a severe chill, should the nurse feel authorized to abbreviate the prescribed duration of the bath. Therein much skill and judgment are required; hence the above rule would be a safe guide. It is a well-known fact that good friction *during* the bath prevents chill and promotes reaction *after* the bath. It is a safe rule in all cold applications never to apply cold water without good friction, and to always insure reaction. If hot bottles and restoratives must be used after a cold procedure, the temperature of the water has probably been too low or, what is more likely, the duration has been too long. A full bath in water at 75° F. for fifteen minutes may chill the patient, whereas a simple dip or a bath of five minutes in the same water would refresh

and stimulate him. It would be a serious error to raise the bath temperature and continue the duration for fifteen minutes. Reaction is more favored by brief applications at low temperature than by prolonged applications at higher temperatures. To make the effect enduring, however, the cold application should be as long as the reactive capacity of the patient admits.

Another good rule in making cold applications (ablutions, effusions, etc.) is to omit washing the upper extremities below the elbows and the lower extremities below the knees. The circulation in these parts being feeble in sick people on account of absence of exercise, their reaction is feeble.

Then again it is well to know how to make cold ablutions, etc., rapidly, drying each part before proceeding to the next. Chilling is thus prevented and reaction correspondingly promoted.

That a nurse should strictly follow the physician's directions is one of the fundamental rules of good nursing, but hydrotherapie demands of a nurse more self-reliance and individual initiative than any other mode of treatment.

HÔPITAL GÉNÉRAL, RHEIMS

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Rheims is an old French town with a population of a little over a hundred thousand, and situated rather off the usual tourist track—in fact, one must go to Rheims deliberately; it is not to be reached by getting off the train en route for somewhere else; but it has not been equally fortunate in getting off the route of marching armies, which from Roman days down almost to our own have always included it in their line of progress and have left upon it their impress. Here, in 496, Clovis was baptized and embraced Christianity. And here, also, after the twelfth century, nearly all the French Kings were crowned—in fact, it seems as if every street and house, and even the very cobblestones of the quaint old city, are rich in memories and associations with an historic and important past. It is not, therefore, a surprise to find that the large old Hôpital Général has its associations likewise, and that it was during the French Revolution, and probably because of it, that it was converted from its original design, that of a Jesuit monastery, and turned over to its present use. The monastery was built about the